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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09-849,886	05/04/2001	Yoshihide Kinbara	Q64212	9968

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SUGHRUE, MION, ZINN, MACPEAK & SEAS  
2100 Pennsylvania Avenue, N.W.  
Washington, DC 20037

[REDACTED] EXAMINER

PADGETT, MARIANNE L

ART UNIT	PAPER NUMBER
	1762

DATE MAILED: 11/07/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.	07/849,886	Applicant(s)	Kinbara
Examiner	M. L. Paigut	Group Art Unit	1762

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE

3

MONTH(S) FROM THE MAILING DATE

OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

Responsive to communication(s) filed on 5/4/01

This action is FINAL.

Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

### Disposition of Claims

Claim(s) 1-26 is/are pending in the application.

Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

Claim(s) \_\_\_\_\_ is/are allowed.

Claim(s) 1-26 is/are rejected.

Claim(s) \_\_\_\_\_ is/are objected to.

Claim(s) \_\_\_\_\_ are subject to restriction or election requirement

### Application Papers

The proposed drawing correction, filed on \_\_\_\_\_ is  approved  disapproved.

The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner

The specification is objected to by the Examiner.

The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. § 119 (a)-(d)

Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

All  Some\*  None of the:

Certified copies of the priority documents have been received.

Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.

Copies of the certified copies of the priority documents have been received  
in this national stage application from the International Bureau (PCT Rule 17.2(a))

\*Certified copies not received: \_\_\_\_\_

### Attachment(s)

Information Disclosure Statement(s), PTO-1449, Paper No(s). 2  Interview Summary, PTO-413

Notice of Reference(s) Cited, PTO-892  Notice of Informal Patent Application, PTO-152

Notice of Draftsperson's Patent Drawing Review, PTO-948  Other \_\_\_\_\_

## Office Action Summary

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1. Claims 1-26 are objected to or rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 appears to have a logic problem, i.e. two contradictory limitations. In lines 1-3, an insulating processing medium is required to be between the electrode and the processing subject, however in lines 6-7 “the electrode [is] being pressed onto the … subject” (emphasis added), which is impossible if there is some medium in between them as required in lines 1-3. The formation of the thin film in line 8, would appear to indicate that the medium remains in between and is not forced away by the relative moment. The independent device claim 13, has analogous logic problems.

Use of relative terms that lack clear metes and bounds in the claims, or in a clear definition in the specification or cited relevant prior art, is vague and indefinite. In claims 8 and 20, see “hard” in “hard compound”. Also note that multiple ranges, as indicated by “such as … (TiC) …” are improper, because it is unclear which scope is necessary to read on the claim, but the broadest may suffice.

In claims 10 and 22, “the contact area” is objected to as lacking antecedent basis, as does “the relative shift rate” and “the viscosity”.

In claim 10, it is unclear when the changing of the parameter(s) takes place. As presently written, it would appear that merely having a range of usable parameters, and not always using the same one, will read in the claim.

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In apparatus claims, method limitation that provide for no necessary structure, add no features to the device claims. Dependant claims that provide for no further structure, are not further limiting. Note that source materials are not part of an apparatus either.

Claims 14, 16-19 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. These claims provide for no necessary apparatus structure.

Note that claim 15, while being an action, therefore a method limitation, requires the capability of spiral motion, such as screwing the electrode down, so the apparatus must be capable in some fashion of this action.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3, 10, 12-19, 22 and 24 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by JP (SHO) 62-9822A to Hitachi.

In the Hitachi reference, see Figure 4 and the partial translation, noting the presence of an electrode, its capability of being press "into" a substrate, or more accurately onto an insulating material (2) and a processing liquid, which the electrode presses against the substrate. Revolutions N, shown in Fig. 4, and described on top of p. 2 of the partial translation, represent both the capabilities of spiral motion, and indicate a unit for achieving it. Note, since deposition or removal from the electrode and processing fluid is a method limitation, claims 14 and 16-19 are included because the apparatus is capable of using such fluids or materials or making layer depend on materials used. The English abstract, supplied by the examiner shows that metal deposition is also occurring a well as removing.

4. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hitachi (JP-62-9822A), in view of HEI 8-300227A to Shingijyutsu et al.

The partial translation of the Hitachi reference as does not indicate what the electrode is made of, or how it is formed, however the Shingijyutsu partial translation and English abstract teaches discharge electrodes as illustrated in Fig. 3, that are made with green compacts as claimed, and may be materials such as TiC. It would have been obvious to one of ordinary skill in the art that the discharge electrode of Hitachi would have been effectively made of such materials, as it is used in similar configurations; as both apparatus require a processing solution to be used therewith, and since both process may involve deposition.

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hitachi (62-9822).

The abstract and partial translation do not give any specific thicknesses for the deposition (polish layer)'s thickness, however given the apparent simultaneous deposition and removal, the layer would have been expected to be quite thin, and therefore within ranges as claimed.

6. Claims 4-5, 7 (and 16-17) are rejected under 35 U.S.C. 103(a) as being unpatentable over Hitachi as applied to claims 1-3, 10, 12-19, 22 and 24 above, and further in view of HEI 6-210,517 to Takahashi (Ohtax KK), especially optionally in view of Shingijyutsu et al.

Hitachi does not discuss particular solution or fluids or polishing material to be used with the machining, just its viscosity characteristics, however as seen in the abstract and partial translation of Takahashi, oils (i.e. greases or lubricants) are standard machining fluids, and they may include semiconductor powder, which is suggestive and inclusive of the semiconductor Si, therefore these conventional materials would have been obvious to use in Hitachi as they provide a viscous fluid, are standardly used, and the semiconductor powder would have been expected to aid the abrasive/polishing teaching. Further, oils provide C components to the fluid, and as can be seen in Shingijyutsu et al, such a C source is desirable in discharge machining.

7. The patent to Sakakibara (JP 06-155,165) provides further teaching of oil processing fluids, thus is equivalent to Takahashi therefore.

8. Claims 11 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hitachi as applied to claims 1-3, 10, 12-19, 22 and 24 above, and further in view of Sakanishi (JP63-306,826A).

The Hitachi patent does not discuss wire electrodes, however Sakanishi shows that such are effective for discharge machining processes, hence would have been effective for supplying

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the required discharge to the polish/deposition/removal process, where the wire electrode was appropriately configured to support the abrasive insulating material. Note that conformation of a wire can easily be shaped to do so.

9.       Claims 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hitachi as applied to claims 1-3, 10, 12-19, 22 and 24 above, and further in view of Magara et al (JP 10-128,620A)

The Hitachi patent does not have much discussion on the electrical connections and configuration/control of the electrical discharge device, but Magara et al (Fig. 1, 4 & 6; English abstract; partial translation of section [0028-0031]), provides such for an electrical machining device with discharge electrode. As Hitachi is lacking in such teachings, it would have been obvious to look to the prior art for appropriate electrical circuits and configurations, such as is provided by Magara et al, which would have been expected to be effective therein due to similarities in the apparatus involved.

10.       The patent to Kawasaki et al (JP 02-139,125A) has a configuration similar to that of Hitachi, hence is equivalent for some of the apparatus claims. Full translations have been ordered for the above Japanese patents, but not yet received as of the writing of this action.

11.       Any inquiry concerning this communication or earlier communications from the examiner should be directed to M L. Padgett whose telephone number is 703-308-2336. The

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examiner can normally be reached on Monday-Friday from 8 am to 4:30 pm and FAX # (703)

872-9311 (regular); 872-9311 (after final); and 305-6078 (unofficial)

M. L. Padgett/mn

Nov. 1, 2002

P.S. The translations for Hei 8-300227, Hei 10-128620, SHO 63-306826A, Hei 2-139125, SHO62-9822A, Hei 6-210517 & Hei 6-155165 have been received & included with this action for applicant's convenience, but have not yet been reviewed by the examiner.

November 6, 2002



MARIANNE PADGETT  
PRIMARY EXAMINER